Approved For Release 2005/02/17 : CIA-RDP78B04770A001100050020-4

25 August 1964

25X1 MEMORANDUM FOR: [redacted]

SUBJECT: Review of Temperature Control Requirements for RTR-12 and RT-24 Processors (PARs 214 and 215, Contract
25X1 [redacted]

TASK/PROBLEM

1. Review temperature control requirements of roller transport processing equipment being designed and built on PAR 214 and
25X1 PAR 215, Contract [redacted] Estimate operating cost of mixed water temperature control system as used in conjunction with existing hot and cold/chilled water systems.

DISCUSSION

2. Attached schematic diagrams of temperature controlled water systems show hot and cold water mixed to maintain a constant temperature mixture (attachment 1), and hot and cold water loops used as sources for heating and cooling media (attachment 2).

3. Mixed Water System:

a. The system shown in attachment 1 is similar to a residential shower mixing valve except that more precise controls are employed. In the operation of the system, hot water and cold/chilled and/or city water are mixed in a mixing tee and discharged to process equipment at a constant temperature. The mixed water is then circulated through heat exchangers to maintain processing solution temperatures and discharged into the wash tanks where it is used to wash film or paper before it is finally discarded. The temperature of the system is set to maintain developer (negative developer in the reversal processor) at the required operating temperature. Other process baths will approach the temperature of the developer but only developer can be precisely controlled. The accuracy of the system depends on heat exchanger surfaces being large enough to handle required heating and cooling loads with a small temperature difference between the process solution and the heating or cooling media.

b. Advantages of a mixed water temperature control system are:

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(1) Can be operated directly from a hot and cold water supply.

25X1 (2) Is an inexpensive system. Estimate cost is [redacted] for each PAR 214 and PAR 215 processor. (This cost is included in present estimates for PARs 214 and 215.)

(3) Low-cost operation. Based on customer furnished production figures, the combined cost of operating mixed water temperature control systems for the RT-12 and RT-24 processors is estimated to be in the order of [redacted] per year. 25X1

c. Disadvantages of a mixed water temperature control system are:

(1) The required temperature difference between the water and the controlled process solution will change as heating or cooling loads change.

(2) Only one bath can be precisely controlled. Other baths will follow the trend of the first bath (developer) but will not be precisely controlled.

(3) Continual consumption of hot and cold/chilled water.

4. Closed Loop System:

(a) In the operation of the closed loop temperature control system shown in attachment 2, hot and chilled water is drawn from the supply sources and passed through heat exchangers as required to maintain 120°F and 50°F water in hot and cold water closed loops and returned to the systems. Hot or cold water is then drawn through process heat exchangers as required to maintain the process solutions at the required temperature. Water discharged from the heat exchangers is returned to the appropriate loop through a three-way valve operating in concert with the process heat exchanger supply valves. One hot water loop and one cold water loop designed for a circulation rate of thirty gallons per minute would control temperature on the reversal processor being built on PAR 214 and the 24-inch processor being built on PAR 215.

b. If each processor was set up to control each processing bath temperature from a closed loop system, seven (7) control systems would be required to operate the reversal processor and three (3) systems to operate the 24-inch negative processor.

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c. Advantages of a closed loop temperature control system (attachment 1) are:

(1) Any processing bath can be controlled at any temperature within the operating range of the system regardless of temperatures at which other baths might operate.

(2) Water would be drawn from the hot or chilled water systems only as required to maintain temperature and returned to the system. No heated or chilled water would be discharged through the wash system as shown in attachment 1.

d. The closed loop temperature control is a versatile system. The only disadvantage is the high cost for fabrication and installation of the equipment. Estimate cost for fabrication and installation of a closed loop system to control processing temperatures in the RT-12 and RT-24 processors is [redacted] (Esti- 25X1
mate is based on installation of a similar system in a [redacted] facility) 25X1

e. Based on a yearly operation cost of [redacted] (estimated) 25X1 for the closed loop system, it would take over 400 years to amortize the additional cost for such a system.

5. If the load (10 to 12 gpm/machine imposed by PAR 214 and PAR 215 processors) appears to overload existing customer hot and cold/chilled water systems, the best place would be to investigate the furnishing of additional heating and/or chilling equipment.

CONCLUSION

6. In view of the above, it is not considered practical to employ a closed loop temperature control system (attachment 2) with the RT-12 and RT-24 processors (PARs 214 and 215).

RECOMMENDATION

7. It is recommended that the equipment being built on PAR 214 and PAR 215 be operated from existing hot and cold/chilled and/or city 25X1 water supply systems (see attachment 1).

[redacted]

AZ:MSS
ENC. 2

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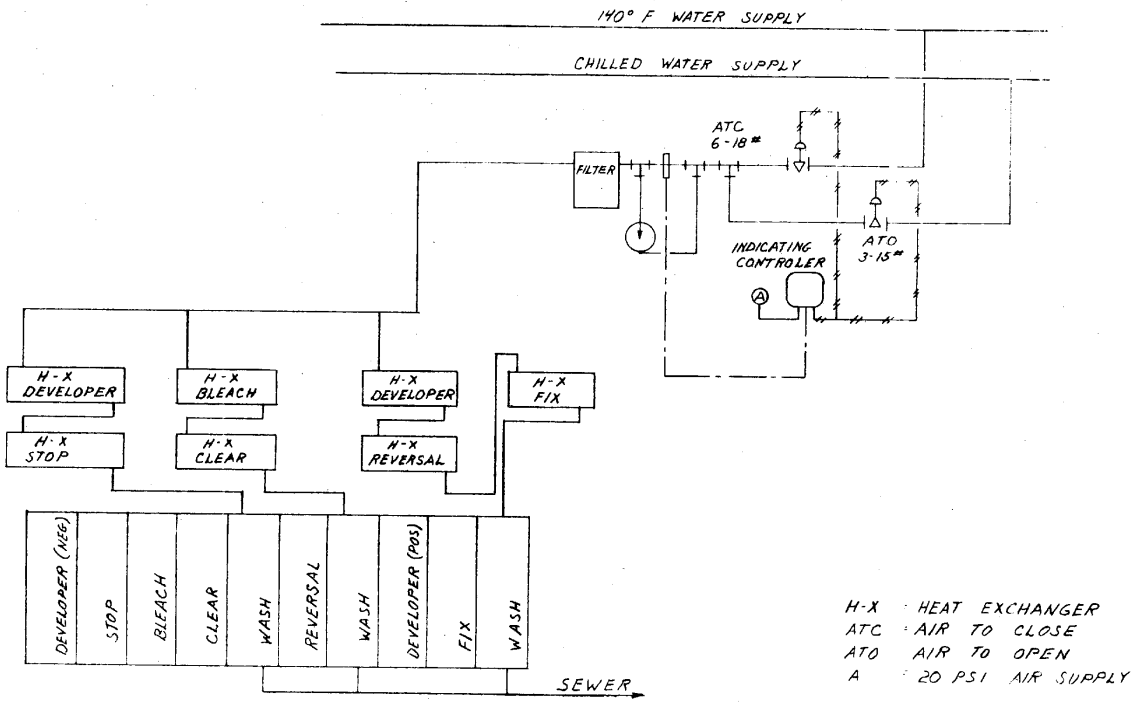

MIXED WATER SYSTEM TYPICAL EACH MACHINE

Attachment 1

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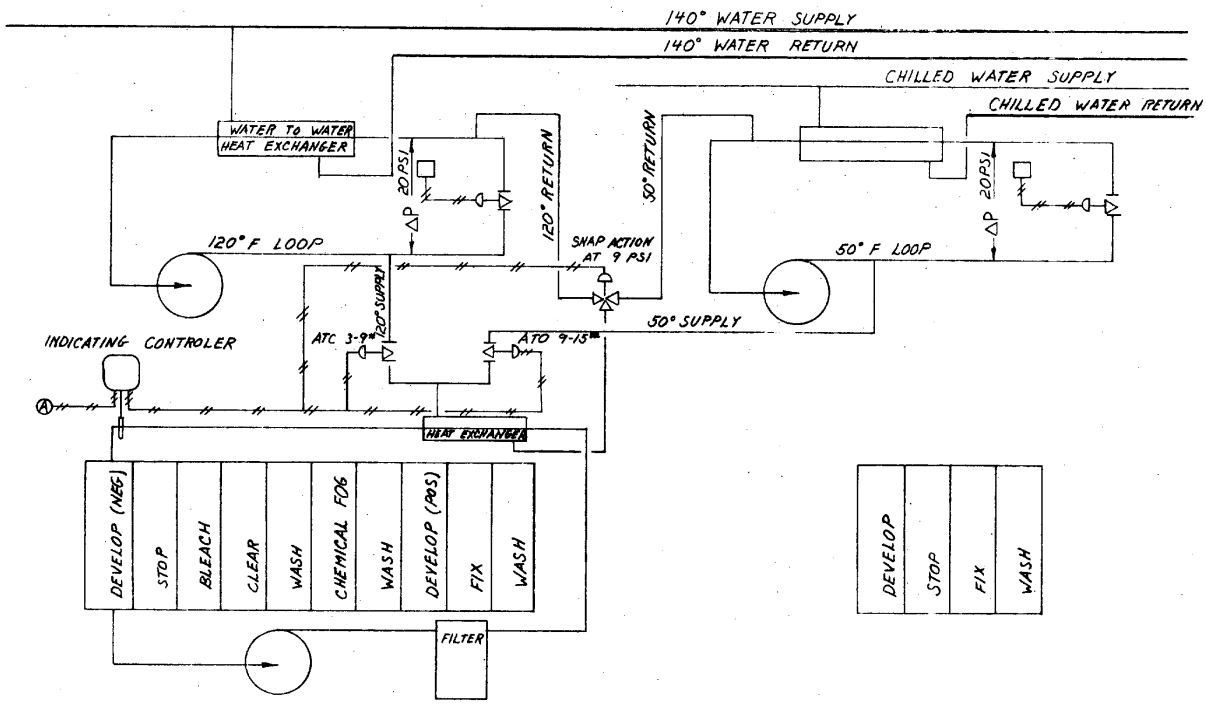

TEMPERATURE CONTROL SYSTEM OPERATING ACROSS 120°F & 50°F LOOPS
TYPICAL 7 PLACES REVERSAL MACHINE, 3 PLACES NEGATIVE MACHINE
SAME SYSTEM

Attachment 2

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PAR-215
Sub 001

21 August 1964

Dear Joe:

Two things bother me about the attached cost estimate for PAR-215 dated 13 August 1964.

a. The "Burden Rate" of 182%: This seems very high--anything we can do to lower this rate?

25X1

b. [redacted] subcontract: As I understand the procedures, this would merely go to another department of the company. Don't they have to get a minimum of three bids and submit them to us for our approval? Or is this considered to be within the corporation with which we have a contract and to be simply an in-house accounting procedure?

Russ

P.S. Will be back in the office on 31 August, then out until Friday, 4 September 1964.

MFR: 10 Sep 64

Joe P. called today and stated that "182% overhead is the going rate." He also said that the word "sub-contract" is a mis-nomer as the work is done inside [redacted]

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